

**User-Supported Regional Truckways and
Regional Rail Capacity Improvement Ideas**

TRANSPORTATION AND COMMUNICATIONS COMMITTEE ATTACHMENT # 5.2

Thursday, June 5, 2003

MEMO

DATE: May 27, 2003

TO: Transportation & Communications Committee

FROM: Mark Griffin, Senior Planner, SCAG

RE: Briefing Papers: User-Supported Regional Truckways
in Southern California; and Regional Rail Capacity Improvement Program

Information Item:

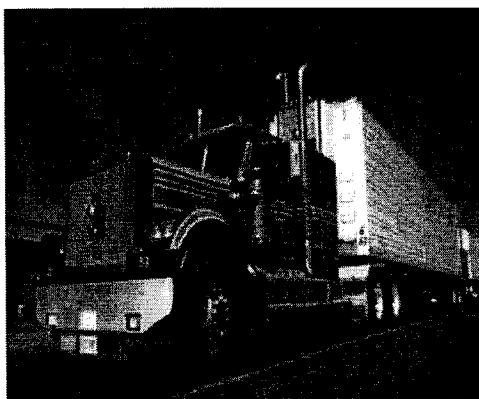
The Southern California region continues to face a growing volume of freight movements by both truck and rail. This volume of freight is forecast to significantly increase over the next twenty years. Two briefing papers, one entitled *User-Supported Regional Truckways in Southern California* and the other *Regional Rail Capacity Improvement Program*, examine potential infrastructure improvements needed to accommodate projected future growth and possible innovative, public/private mechanisms for financing these improvements. These infrastructure improvements are included as integral components of SCAG's economic revitalization strategy.

Summary

Freight volumes, and the number of both truck and train trips, within the SCAG region are forecast to increase over the next twenty years. For example, by 2010 the BNSF rail mainline is forecast to carry 80 freight trains per peak day. The two UP rail mainlines in the region will handle 85 freight trains daily, which is sufficient to warrant 5-6 tracks. Furthermore, by 2020 the BNSF line is estimated to carry 120 freight trains, while the UP lines will carry 130 freight trains per peak day, or 7 tracks worth of trains. Currently, these lines are mostly single and double track, though some portions are triple track. Similarly, truck vehicle-miles-traveled (VMT) in the Eastern Gateway Corridor, consisting of the I-210, I-10, and SR-60 between the I-710 and I-10/SR-60 interchange in Beaumont, is currently 5,309,500, and this is forecast to increase significantly by 2020.

Accommodating this growth may well require the development of a regional system of truckways as well as significant increases in mainline track capacity, along with other mitigation measures such as grade separations. These investments will enhance the region's economic vitality in terms of jobs and tax revenue, as well as provide needed congestion relief and safety and air quality benefits. Due to limited transportation funding, it is anticipated that the capital costs for the development of these facilities would be financed through the issuance of tax-exempt bonds, which would be leveraged against user fees collected on all truck or container movements within the corridor.

Due to the national significance of this issue, Southern California will need to work with the FHWA as well as other regions exploring similar initiatives to ensure that federal legislative and funding programs are addressed within a uniform and national framework.



USER-SUPPORTED REGIONAL TRUCKWAYS IN SOUTHERN CALIFORNIA

**Southern California Association of Governments
Briefing Paper
May 12, 2003**

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USER-SUPPORTED REGIONAL TRUCKWAYS IN SOUTHERN CALIFORNIA

1. Introduction

The development of a regional system of user supported, dedicated truckways offers a viable and self-financing way to mitigate congestion and reduce vehicle emissions in Southern California. This Briefing Paper details the broad physical and financial parameters of a proposed regional truckways system comprising 142 center-lane miles of dedicated truck lanes extending from the San Pedro Bay ports eastward to Barstow. At a capital development cost of approximately \$16.5 billion, it can be shown that a per-mile toll ranging from \$0.38 to \$0.80, and averaging \$0.56 over a thirty-year financing period, would be sufficient to totally fund the development and operation of this system. Applicable to existing and forecast volumes of truck traffic within this nationally significant trade corridor, it is envisioned here that this toll would be imposed and administered by a regionally controlled Corridor Authority. This authority would be instituted as a joint-powers authority in a fashion analogous to that of the Transportation Corridor Authorities established in Orange County, and would similarly adhere to existing Caltrans and labor relations contracting protocols.

The Southern California region is facing a crisis in goods movement transportation, characterized by a dramatic growth in rail and truck traffic that is running head-long into limited transportation funding and high infrastructure improvement costs. Forecasts of greater regional population and employment, and projections of increasing international and domestic trade volumes, all lead inevitably to worsening congestion and the potential of gridlock occurring within the region's surface transportation system—a situation that would surely have a detrimental impact on the region's, as well as the nation's, economic well-being.

The surface transportation system is already strained by the number of trucks and trains operating in and through the region. Worst

among eight of the nation's most congested urban areas, Los Angeles metropolitan commuters now endure 136 annual delay-hours per commuter, and SCAG forecasts that average delay will increase in the region.

The development of a regional system of user supported, dedicated truckways offers a viable and potentially self-financing solution for mitigating congestion and reducing mobile source emissions arising from surface transportation operations in Southern California, while also ensuring the safe, reliable, and efficient movement of goods essential to the nation's economy. The general motoring public would benefit significantly in terms of congestion relief, and enjoy greater operational safety and system reliability. Together with improved regional air quality, these environmental and safety advantages warrant a significant level of public involvement in the realization of a regional truckways system.

Depending on various regulatory and operating assumptions, estimates indicate that revenues generated by tolls collected from users of these facilities would be sufficient to both finance the total capital costs of development and cover the operations and maintenance costs of the system.

This brief presents an example of how a regional system of dedicated truckways might be configured in the region, providing a preliminary estimate of likely capital development costs, facility dimensions, and an estimate of potential user-supported revenues.

2. Conceptual Engineering of Truckways

In a final report released in February 2001, SCAG examined the feasibility of a dedicated truckways facility running east-west along State Route 60. This report considered conceptual physical design and operational characteristics a regional truckways system would require, and in addition explored user-supported financing options. Envisioning a facility with two dedicated truck lanes operating in each direction, this report concluded that the development of such a facility would be feasible, and that the benefits

a truckways system would contribute to the region's surface transportation system as a whole were sufficient enough to warrant the participation of public funding in the creation of these lanes.

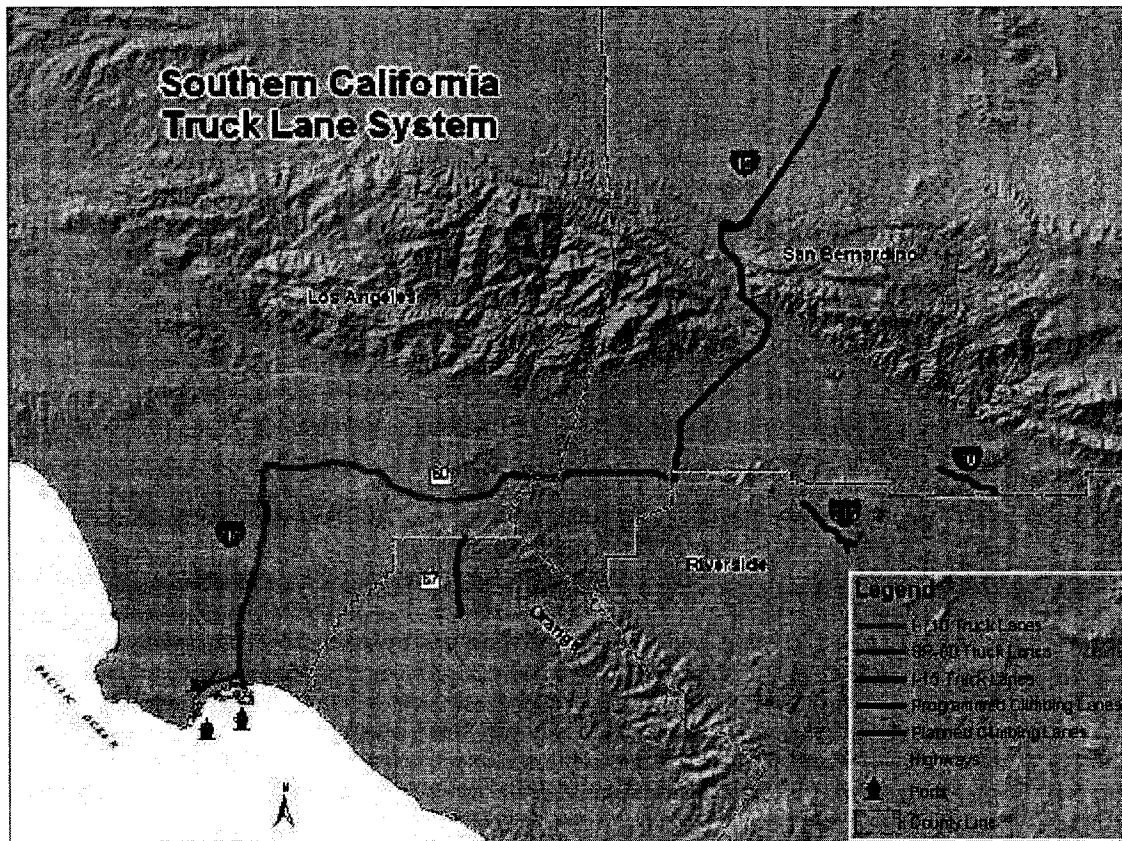
Additional major investment studies of key regional goods movement corridors are presently underway for the I-710 and I-15, and a study of the Eastern Gateway Freeway Corridor, representing an expanded conception of the SR-60 truck lanes, will commence later this year. Also, the Reason Foundation recently released a study of inter-city toll truckways, which concludes that tolled truckways would be financially self-sufficient across a wide range of possible development scenarios.

Combining insights gained and now emerging from this set of studies, an outline of a regional truckways system can be discerned

revenue contribution would be necessary to finance development of the system.

3. Capital Costs And Revenue Requirements

Using information developed through the various corridor studies that have been undertaken, it is possible to demonstrate the level of user-contributed revenue necessary to finance development of a regional truckways system. The SR60 Feasibility Study established an ability to fund 30% of development costs through a voluntary tolling of truck trips. Using a graduated toll rate topping out at 70 cents for the largest vehicles and 35 cents for lighter trucks, this study evaluated facility configurations, right-of-way requirements, present and forecast truck volumes, and market pricing mechanisms to determine the overall feasibility of a dedicated



sufficiently to allow for a preliminary exercise to ascertain what level of user-supported

truckway in an urban context. Looking at dedicated truckways in a rural, inter-city context, the Reason Foundation has

demonstrated that truckway facilities are capable of generating positive returns on investment under a broad range of differing assumptions, and even at market-rate levels of return. Of particular significance in this instance are the operational benefits that could be realized with a nation-wide authorization for the use of large capacity vehicles (LCVs). By permitting up to double the payload carrying capacity of presently authorized truck sizes and weights in California, the operation of LCVs along dedicated truck facilities offers the potential of fewer total trips and less regional vehicle miles traveled (VMT), a corresponding reduction in vehicle emissions, and, more importantly for private equipment operators, greater capital utilization margins. These operating benefits, realized as a reduction in operating costs, were estimated by the Reason Foundation of having a value of up to \$40 billion a year at the national level. The capacity utilization benefits accruing with the use of LCVs can commence on trips as short as 14 miles in length, and are soundly beneficial for trips greater than 25 miles. Taking these operating benefits into account, the Reason Foundation estimated rather conservatively that per mile toll rates structure to capture just 50% of these greater operating margins would support a toll rate of up to 80 cents per-mile.

In an urban context, better equipment utilization factors would be realized as well through the greater operating speeds and system reliability possible along free-flowing truckways, resulting in utilization factors once again several multiples greater than those currently attainable.

lane-mile basis, it can be shown—assuming an averaged urban area per-mile development cost of \$27.5 million, a design capacity of 800 vehicles per-mile per-hour, an interest rate of 5%, and an 80 cents per-mile toll—that revenues generated by the facility could potentially exceed capitalization costs by a ratio of greater than 2:1:

Per Lane-mile Analysis

Annual Debt Service:	\$1.7 million
Capacity Revenue:	\$3.8 million
Coverage Ratio:	2.24

This calculation suggests that user-supported truckways could conceivably be built where ever sufficient truck traffic exists.

B. Truck Vehicle Miles Traveled (VMT)

Alternatively looking at a revenue estimate based VMT, it can be demonstrated that, given an average corridor trip length of 37 miles and the average annual daily truck trips (AADTT) of 143,500 presently occurring along the Eastern Gateway Freeway Corridor, an average per-mile toll of 56 cents would fully cover the estimated \$16.5 billion capital development, and operations and maintenance costs of a regional truckways system. (See Section 4 following).

This estimate shows that there is adequate demand in the corridor to support the truckways system at a reasonable per-mile toll.

SCAG Region Dedicated Truckways System					
Route	Length (miles)	Lane miles	Total Cost (000)	Per Mile Cost (000)	Lane Mile Cost (000)
Truck Lanes					
I-710	18.0	86.0	\$2,166,200	\$120,344	\$25,188
SR-60	37.8	151.2	\$4,300,000	\$113,757	\$28,439
I-15	86.0	344.0	\$10,066,386	\$117,051	\$29,263
Totals	141.8	581.2	\$16,532,586		

A. Conceptual One-mile

Considering the revenue coverage ratio possibilities of dedicated truckways on a per-

C. System Carrying Capacity

Conceptual truckway designs thus far developed envision primarily a two-lane facility

operating in each direction. In such a configuration, the total per-mile, per-hour carrying capacity of the system would be 3,200 vehicles, indicating a total daily system capacity of 10,905,600 truck-miles. With an AADTT of 143,500 and an average trip length of 37 miles, present daily truck-mile demand can be estimated at 5,309,500; suggesting a system utilization ratio of 0.49, and therefore sufficient capacity at the overall design level.

At each of these levels of analysis, the concept of a user-supported and self-financing regional system of dedicated truckways appears credible, and even advantageous. Further investigations will help to clear some present caveats that should be noted concerning estimated facility costs, vehicle counts, and system configuration. Certainly more advanced design of the truckways system as it would apply to particular highway segments could find value engineering opportunities capable of lowering the averaged system-wide cost figures used in this brief. Further detail on vehicle counts and movements throughout the system should similarly help to define segments of the system where a right-sizing exercise would realize cost savings and operating efficiencies.

Furthermore, as the various analytical approaches shown here suggest, other possible configurations of a regional truckways system, such as one designed specifically to handle large capacity vehicles (LCVs, such as Turnpike Doubles) that would be built-up or broken-down at termini situated at the ports in the west and at perhaps Ontario and Barstow in the east, would also be potentially viable and worthy of further evaluation.

And finally, as the administration's recent proposal to fund \$1.2 billion in fuel cell vehicles and hydrogen fuel research portends, technological advances in engine design and alternative fuels will likely emerge as the regional truckways system is being developed. The truckways concept would facilitate the introduction and proliferation of these technologies by providing for distribution and service facilities related to the operations along dedicated right-of-ways.

4. Regional Toll Truckway Preliminary Financial Analysis

A preliminary assessment of the financial viability of a dedicated toll truckway facility in the Southern California region indicates that based on certain assumptions, a toll truckway facility would be capable of covering operating and maintenance costs in addition to capital development costs by the year 2039. This preliminary assessment relies on the following key assumptions:

- To raise construction funds, net revenues generated from the tolls are leveraged to issue tax-exempt revenue bonds. Net revenues also include interest earnings less operations and maintenance related expenses.
- The regional toll truckway system would be 100 percent leveraged through debt. Capital financing instruments could potentially include a combination of senior-lien tax-exempt bond and federal credit enhancement in the form of a loan (at 33% of total eligible capital cost –TIFIA). The flexible repayment schedule and the subordinate lien would enhance the coverage ratio on the senior bonds.
- Total construction costs are estimated to be \$16.5 billion in today's dollars. Capital cost assumptions are based upon gross cost estimates produced in a set of previous studies.
- The facility is assumed to operate with electronic toll collection technology estimated to cost about \$14.8 million annually. Additional operation and maintenance costs associated with the roadway are assumed to be \$4.3 million annually.
- Tolls are assumed to be imposed at an average rate of \$0.56 per mile.
- The analysis involving tax-exempt revenue bonds include capitalized interest to cover the years between debt issuance and the commencement of toll revenue collection

– issuance assumed in 2005 and toll revenue collection beginning in 2010.

- The regional toll truckway project would require significant long-term borrowing. As a result, the analysis assumes debt retirement in 2039.
- A 5 percent interest rate is assumed for the tax-exempt revenue bond and the TIFIA loan.
- The debt-service coverage ratios, comprising net revenues (after deducting operating and maintenance expenses) over projected debt service requirements, are assumed to meet a 1.68x coverage factor for the senior lien and a 1.04x coverage factor for the TIFIA loan.

REGIONAL TOLL TRUCKWAY Tax Exempt Bond Financing

Assumptions

Par Amount (Senior Tax Exempt)	\$12,100,000,000
TIFIA Loan	\$6,800,000,000
Interest Rate	5.00%
Traffic Growth Rate per Year	2.60%
Average Annual Daily Truck Trips (AADTT)	143,500
Average Trip Length (Miles)	37
Annual Operations and Maintenance Costs	\$4,359,000
Annual Electronic Tolling Costs	\$14,760,736
Debt Issuance/Construction Start Year	FY 2005
Construction Draws	FY 2005 - FY 2009
Capitalized Interest Period	FY 2005 - FY 2009
Interest Earning Rate	5.00%
Commencement of Toll Operation	FY 2010
Average Toll Rate/Mile	\$0.56

Sources

Senior Bond Proceeds	\$12,100,000,000
TIFIA Loan Proceeds	\$6,800,000,000
Interest Earnings	\$1,620,721,210
TOTAL SOURCES	\$20,520,721,210

Uses

Capital Dev. Costs (Cons. w/ Contingencies, Eng., RoW)*	\$16,532,586,000
Capitalized Interest During Construction	\$3,025,000,000
Cost of Issuance	\$180,183,029
Debt Service Reserve Fund	\$782,952,181
TOTAL SOURCES	\$20,520,721,210

*Capital cost assumptions are based upon gross cost estimates produced in a set of previous studies.
Numbers may not add due to rounding.

**REGIONAL TOLL TRUCKWAY
Tax Exempt Bond Financing**

Fiscal Year	Trucks Subject to Tolls	Toll Rate/Mile	Net Revenues (Less O&M)	Senior Debt Service	Debt Service Reserve Fund	Annual Net Debt Service	Senior Debt Coverage Ratio	TIFIA Debt Service	TIFIA Coverage Ratio
2005				\$ 302,500,000	\$ (19,573,805)				
				\$ 302,500,000	\$ (19,573,805)	\$ 565,852,391			
2006				\$ 302,500,000	\$ (19,573,805)				
				\$ 302,500,000	\$ (19,573,805)	\$ 565,852,391			
2007				\$ 302,500,000	\$ (19,573,805)				
				\$ 302,500,000	\$ (19,573,805)	\$ 565,852,391			
2008				\$ 302,500,000	\$ (19,573,805)				
				\$ 302,500,000	\$ (19,573,805)	\$ 565,852,391			
2009				\$ 302,500,000	\$ (19,573,805)				
				\$ 302,500,000	\$ (19,573,805)	\$ 565,852,391			
2010				\$ 391,476,090	\$ (19,573,805)				
	1,588,638,778	\$0.80	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2011				\$ 391,476,090	\$ (19,573,805)				
	1,629,943,386	\$0.78	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2012				\$ 391,476,090	\$ (19,573,805)				
	1,672,321,914	\$0.76	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2013				\$ 391,476,090	\$ (19,573,805)				
	1,715,802,284	\$0.74	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2014				\$ 391,476,090	\$ (19,573,805)				
	1,760,413,143	\$0.72	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2015				\$ 391,476,090	\$ (19,573,805)				
	1,806,183,885	\$0.70	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2016				\$ 391,476,090	\$ (19,573,805)				
	1,853,144,666	\$0.68	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2017				\$ 391,476,090	\$ (19,573,805)				
	1,901,326,427	\$0.67	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2018				\$ 391,476,090	\$ (19,573,805)				
	1,950,760,915	\$0.65	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2019				\$ 391,476,090	\$ (19,573,805)				
	2,001,480,698	\$0.63	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2020				\$ 391,476,090	\$ (19,573,805)				
	2,053,519,197	\$0.62	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2021				\$ 391,476,090	\$ (19,573,805)				
	2,106,910,696	\$0.60	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2022				\$ 391,476,090	\$ (19,573,805)				
	2,161,690,374	\$0.59	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2023				\$ 391,476,090	\$ (19,573,805)				
	2,217,894,323	\$0.57	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2024				\$ 391,476,090	\$ (19,573,805)				
	2,275,559,576	\$0.56	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2025				\$ 391,476,090	\$ (19,573,805)				
	2,334,724,125	\$0.54	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2026				\$ 391,476,090	\$ (19,573,805)				
	2,395,426,952	\$0.53	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2027				\$ 391,476,090	\$ (19,573,805)				
	2,457,708,053	\$0.52	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2028				\$ 391,476,090	\$ (19,573,805)				
	2,521,608,462	\$0.50	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2029				\$ 391,476,090	\$ (19,573,805)				
	2,587,170,282	\$0.49	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2030				\$ 391,476,090	\$ (19,573,805)				
	2,654,436,710	\$0.48	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2031				\$ 391,476,090	\$ (19,573,805)				
	2,723,452,064	\$0.47	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2032				\$ 391,476,090	\$ (19,573,805)				
	2,794,261,818	\$0.45	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2033				\$ 391,476,090	\$ (19,573,805)				
	2,866,912,625	\$0.44	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2034				\$ 391,476,090	\$ (19,573,805)				
	2,941,452,353	\$0.43	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2035				\$ 391,476,090	\$ (19,573,805)				
	3,017,930,114	\$0.42	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2036				\$ 391,476,090	\$ (19,573,805)				
	3,096,396,297	\$0.41	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2037				\$ 391,476,090	\$ (19,573,805)				
	3,176,902,601	\$0.40	\$ 1,249,591,681	\$ 391,476,090	\$ (19,573,805)	\$ 743,804,572	1.68	\$ 487,096,646	1.04
2038				\$ 391,476,090	\$ (215,311,850)				
	3,259,502,069	\$0.39	\$ 1,249,591,681	\$ 391,476,090	\$ (210,418,399)	\$ 357,221,932	3.50	\$ 487,096,646	1.83
2039				\$ 391,476,090	\$ (205,524,947)				
	3,344,249,122	\$0.38	\$ 1,249,591,681	\$ 391,476,090	\$ (200,631,496)	\$ 376,795,737	3.32	\$ 487,096,646	1.79
Average Fee/Mile \$0.56				\$ 26,513,565,423	\$ (2,123,757,790)	\$ 24,389,807,633		\$ 14,612,899,378	



REGIONAL RAIL CAPACITY IMPROVEMENT PROGRAM

**Southern California Association of Governments
Briefing Paper
May 12, 2003**

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REGIONAL RAIL CAPACITY IMPROVEMENT PROGRAM

1. Introduction

Regional rail operations, both for freight and passengers, are facing the very real prospect of a crippling level of congestion within just a few years time. With Class 1 railroads continually failing to earn a rate of return greater than their cost of capital, it would benefit the public greatly if a means were developed to permit public investments in regional rail capacity. This Briefing Paper details an approach that would provide an institutional and financial structure permitting public participation in the development of regional rail capacity while also ensuring that the local needs for congestion mitigation are fully satisfied. By taking advantage of the interest rate differential between private sector capital costs and tax-credit bonds, an average fee of \$5.39 per twenty-foot equivalent unit (TEU) applied to UPRR and BNSF traffic through the Los Angeles Basin Corridor would be sufficient to finance both the \$1.2 billion needed for main line capacity and fully \$2.2 billion of the surface traffic and other mitigation measures necessary to accommodate forecasted increases in rail movements through local communities. This approach, from the perspective of the railroads, would accomplish necessary mainline capacity improvements at no additional cost, while providing a substantial level of funding for local mitigation measures of inestimable political value.

The Southern California region is facing a crisis in goods movement transportation, characterized by a dramatic growth in rail and truck traffic combined with limited transportation funding and high infrastructure improvement costs. Forecasts of population and employment growth, and projections of increasing international and domestic trade volumes, all point to worsening congestion and the potential for gridlock, an occurrence that would have a serious impact on the region's – and the nation's – economic well-being.

Given the projected growth in freight and passenger railroad traffic, the region faces a serious shortfall in mainline track and intermodal rail yard capacity. The mainlines east of downtown Los Angeles will reach capacity before the end of the decade and will need to be triple- tracked or even quadruple-tracked in some segments. There is also a need to build an estimated 130 highway-rail grade separations east of downtown Los Angeles. Other critical bottlenecks, such as the rail-to-rail crossing at Colton Junction, and the two-track limitation of the Badger Bridge crossing of the Cerritos Channel, will need to be addressed. Additional track extensions, centralized traffic control, storage tracks and other yard improvements in the port area will also have to be constructed. Failure to build these improvements could jeopardize economic growth, environmental quality, and national security.

2. Conceptual Engineering of Rail System Improvements

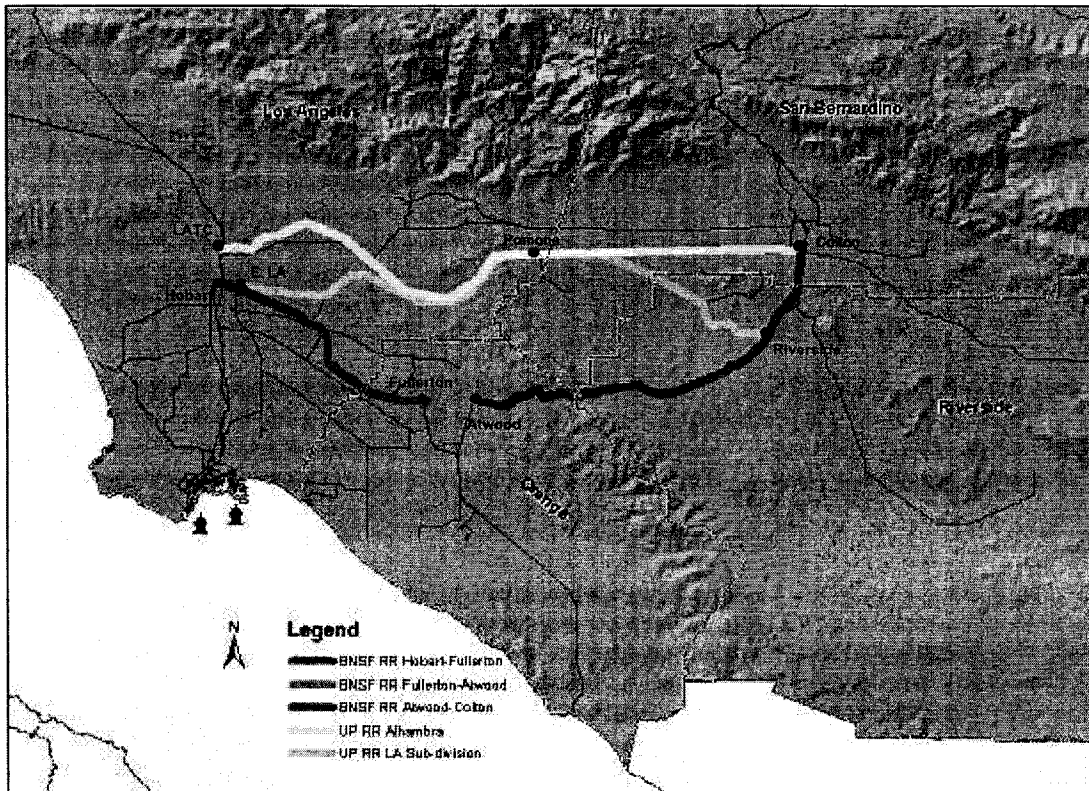
In 2010, the BNSF line will see 75 passenger trains and 80 freight trains per peak day. The two UP lines will split 25 passenger trains and 85 freight trains daily. According to SCAG forecasts, this means that in less than 10 years, the Alameda Corridor-East would carry enough trains to warrant 5-6 tracks.

In 2025, it is estimated that the BNSF line will carry 100 passenger trains and 120 freight trains, while the UPRR lines will share 40 passenger trains and 130 freight trains. This volume would warrant 7 tracks.

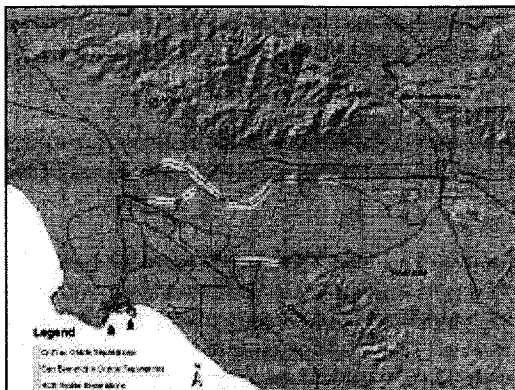
With a maximum capacity of 50 trains per day per line, the SCAG study showed that both BNSF and UPRR will have track capacity shortfalls on certain line segments by 2010, barring any major improvements. BNSF has a single rail line running through the Alameda Corridor-East from Redondo to Colton Crossing. For 46.4 miles of the route there are 2 main tracks; 16.6 miles have 3 main tracks; and 1.5 miles are covered by 4 main tracks. The UPRR Los Angeles Sub-division line includes

4.2 miles of triple track (on a portion of the route shared with BNSF); 42.3 miles of double-tracked mainline (3.1 miles with BNSF); and 12.4 miles of single track with sidings. The UPRR Alhambra line (including the East Bank Line) has 21.9 miles of double-tracked mainline, and 38.6 miles of single track with siding.

SCAG examined possible capacity improvements to the Alameda Corridor-East rail lines. The engineering objective was to devise a set of improvements that would maintain present levels of system delay with the number and type of rail operations forecast for 2010 and 2025 traffic levels.



This exercise determined that there was a set of capital improvements and operating options that would allow the system to perform at its present level of service while accommodating the forecast increase in both freight and passenger rail operations. The estimated cost for this rail capacity improvement program totals \$1.2 billion.



Growth of this magnitude in the number of daily train operations will have profound effects on congestion at railroad grade crossings and on the regions' freeway system. The Alameda Corridor-East Trade Corridor Plan includes grade separations costing an estimated \$2.2 billion.

3. Program Implementation Options

The capacity improvement program recommended by SCAG would be financed with a fee on corridor traffic hauled by UPRR and BNSF. It is also recommended that discussions take place with other west coast ports regarding a similar fee approach to minimize any potential for cargo diversion.

The fee will provide a pool of capital for investment in the improvement program. The investment will be made along the regional main line rail alignments. The movement of a greater volume of goods through the main line system will require local congestion mitigation, thus the improvement program provides funding for grade separations.

In order collect and distribute funds throughout the corridor for eligible capital improvement projects, it is recommended that SCAG create a subsidiary agency. The role of this agency, here referred to as the Southern California Railroad Infrastructure Financing Authority (SCRIFA), would be limited to issuing and servicing debt, administering the fee collection process, and distributing money for approved projects to the railroads and to implementing agencies. Similar agencies should be created for administering funds for rail projects in other regions along the west coast.

SCRIFA would work with project sponsors to seek grant funding for capital and operating purposes, and would also seek federal loans and issue revenue bonds.

Eligible capacity improvement projects in the corridor would include:

- Freight railroad infrastructure (tracks, signals, yards, rail-to-rail grade separations, and other freight rail facilities)
- Commuter rail facilities
- Grade separations of highway-rail crossings.

The UPRR and the BNSF would jointly agree on the priority of alternative freight railroad infrastructure projects. The railroads and the SCRRRA (Metrolink) would determine priorities for improving commuter rail operations. SCRIFA, in consultation with all stakeholders, would determine priorities for grade separation investments.

The proposed capacity improvements would include a total investment of \$3.4 billion in Southern California: \$1.2 billion for railroad infrastructure projects and approximately \$2.2 billion in grade separation projects.

These capacity improvement projects would be financed by a fee on containers transiting the corridor. A similar fee structure could be established for rail haul containers through other west coast ports. SCRIFA would adopt a specific fee structure designed to cover projected debt service and administrative costs. The fee would have a term of 20 years from the date of first revenue collection.

National Coordination

Southern California recognizes the national importance of this rail financing methodology, and is working with representatives of the FHWA and other regional planning agencies that are exploring similar initiatives in the Northwest, Mid-West, and Mid-Atlantic regions of the nation. This inter-regional collaboration and federal coordination will work to ensure that federal legislative and funding programs are structured in a fashion that permits each region to address their particular priorities within a uniform and national framework.

**Alameda Corridor-East Train Forecast
(Average Daily Trains)**

	2000	2010	2025
Freight	112	165	250
BNSF	57	80	120
UP	55	85	130
Passenger	58	100	140
BNSF	46	75	100
UP	12	25	40
Total – All Trains	170	265	390

(Source: SCAG, L.A. – Inland Empire Railroad Mainline Advanced Planning Study, 2002)

4. Regional Rail Capacity Improvement Program Preliminary Financial Analysis

A preliminary analysis indicates that based on certain assumptions, a rail capacity improvement program in the Southern California region would be financially viable. A fee levied on corridor traffic hauled by UPRR and BNSF would be capable of covering proposed capital improvement costs. This preliminary assessment relies on the following key assumptions:

- To raise capital improvement funds, tax credit bond proceeds would be leveraged from fees assessed on containers that are shipped by the railroads to and from the Ports of Los Angeles and Long Beach.
- Total capital improvement costs are estimated to be \$3.4 billion.
- Fees are assumed to be imposed at an average rate of \$5.39 over the life of the tax credit bond – 20 years.
- TEUs subject to railroad fees range from 13.4 million when fee assessment commences in the year 2007 through 2009, 19.8 million from the year 2010 through 2024 and 30 million in the year 2025 and 2026 – all debt is retired in 2026. Estimates of TEUs subject to fees are based on forecasts of average daily trains.
- A sinking fund is established to pay back the principal borrowed – earning 5 percent interest annually.
- The assumption is that the buyers of tax-credit bonds earn the ability to claim federal income tax credits which are designed to be in lieu of interest payments thereby holding the issuer responsible for only the principal portion of the debt.

RAILROAD TAX CREDIT BOND FINANCING

Sinking Fund Balance Summary

Par Amount \$3,400M

Fiscal Year	TEUs Subject to Fees	Fee per TEU	Annual Payment to Sinking Fund	Interest Earned	Sinking Fund Balance
2007	13,440,000	\$ 7.65	\$ 102,824,796		\$ 102,824,796
2008	13,440,000	\$ 7.65	\$ 102,824,796	\$ 5,141,240	\$ 210,790,833
2009	13,440,000	\$ 7.65	\$ 102,824,796	\$ 10,539,542	\$ 324,155,171
2010	19,800,000	\$ 5.19	\$ 102,824,796	\$ 16,207,759	\$ 443,187,726
2011	19,800,000	\$ 5.19	\$ 102,824,796	\$ 22,159,386	\$ 568,171,909
2012	19,800,000	\$ 5.19	\$ 102,824,796	\$ 28,408,595	\$ 699,405,300
2013	19,800,000	\$ 5.19	\$ 102,824,796	\$ 34,970,265	\$ 837,200,362
2014	19,800,000	\$ 5.19	\$ 102,824,796	\$ 41,860,018	\$ 981,885,176
2015	19,800,000	\$ 5.19	\$ 102,824,796	\$ 49,094,259	\$ 1,133,804,232
2016	19,800,000	\$ 5.19	\$ 102,824,796	\$ 56,690,212	\$ 1,293,319,240
2017	19,800,000	\$ 5.19	\$ 102,824,796	\$ 64,665,962	\$ 1,460,809,998
2018	19,800,000	\$ 5.19	\$ 102,824,796	\$ 73,040,500	\$ 1,636,675,295
2019	19,800,000	\$ 5.19	\$ 102,824,796	\$ 81,833,765	\$ 1,821,333,856
2020	19,800,000	\$ 5.19	\$ 102,824,796	\$ 91,066,693	\$ 2,015,225,345
2021	19,800,000	\$ 5.19	\$ 102,824,796	\$ 100,761,267	\$ 2,218,811,409
2022	19,800,000	\$ 5.19	\$ 102,824,796	\$ 110,940,570	\$ 2,432,576,775
2023	19,800,000	\$ 5.19	\$ 102,824,796	\$ 121,628,839	\$ 2,657,030,411
2024	19,800,000	\$ 5.19	\$ 102,824,796	\$ 132,851,521	\$ 2,892,706,728
2025	30,000,000	\$ 3.43	\$ 102,824,796	\$ 144,635,336	\$ 3,140,166,861
2026	30,000,000	\$ 3.43	\$ 102,824,796	\$ 157,008,343	\$ 3,400,000,000

Total Payment to Sinking Fund **\$ 2,056,495,929**

Total Sinking Fund Earnings @ 5% **\$ 1,343,504,071**

Average Fee per TEU: \$5.39

COMPARATIVE ANALYSIS

Railroad Mitigation Financing

Par Amount \$1,200M

	30 Yr Bond @7%	20 Yr Tax Credit Bond (Sinking Fund Earnings @5%)
Annual Debt Service	\$ 96,212,691	\$ 36,291,105
Interest Cost Over Life of Bond	\$ 1,686,380,735	\$ -
Total Cost Over Life of Bond	\$ 2,886,380,735	\$ 725,822,093*

*Sinking fund earnings for Tax Credit Bond total \$474.20M

Note: Numbers may not add due to rounding